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WATER REGULATION DECISIONS IN CENTRAL KANSAS AFFECTING CHEYENNE BOTTOMS WETLAND AND NEIGHBORING FARMERS

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Abstract. *A water use regulation order by the Chief Engineer of the Division of Water Resources of the Kansas State Board of Agriculture addressed a controversial issue: water allocation for agricultural, wetland, and urban users in Central Kansas. The specific study area includes Cheyenne Bottoms Wetland, a preserve with important habitat conditions for many migratory bird species. This region is economically dependent on irrigated agriculture. Groundwater withdrawal for irrigation had caused the water table to decline and left the wetland with no consistent water source. The Chief Engineer required many farmers to reduce their irrigation water use. An evaluation of this order indicates that it was a logical regulation, given current water law. Although many farmers fear its impact on future water use regulation decisions, analysis reveals that this decision will not set a legal precedent.*

On January 29, 1992, the Chief Engineer of the Division of Water Resources of the Kansas State Board of Agriculture made a decision regarding a water use conflict in Central Kansas. The Chief Engineer ordered the establishment of an Intensive Groundwater Use Control Area (IGUCA) in the Walnut Creek Valley in parts of Barton, Rush, and Ness Counties (Pope 1992) (Fig. 1). By establishing an IGUCA, the Chief Engineer can decide to redistribute water appropriations to solve a regional water dispute. As set by Kansas Water Law, the possible reasons for establishment of an IGUCA in a certain region are: declining groundwater levels, withdrawal rates which exceed recharge rates, waste of water, deterioration of water quality, or other conditions which require regulation in the public interest (K.S.A.:82a-1036). Under this specific IGUCA order, the Chief Engineer reduced water appropriations for farmers who held Junior rights, and gave appropriations to Cheyenne Bottoms Wetland, which held one of the oldest Senior water rights in the area. In 1948, the Kansas Fish and Game Commission (later Kansas Department of Wildlife and Parks) was granted a Senior appropriation for

much of the water flow from the Wet Walnut Creek for diversion to the wetland (Layher and Zucherman 1988).

The order from the Chief Engineer was viewed as an historic decision for several reasons. First, the state of Kansas never before ruled in favor of wildlife over agriculture in a water use dispute (Hays 1992). This water rights issue was presented by the media and politicians as a conflict between farmers and environmentalists, so the regulatory decision took many people by surprise. Second, water resource distribution problems across the country continue to intensify as competing users of scarce water supplies come into conflict with ever greater frequency (Goldstein 1971). Lastly, if this decision were challenged and upheld in court, then it could set a legal precedent, in which future water use regulation decisions would be more favorable to wildlife than to other users (Hays 1992). Because of these concerns, the IGUCA order was given wide media coverage. In fact, this controversy over the muddy Walnut Creek Basin near Great Bend, Kansas was even covered by the national media.

The Cheyenne Bottoms Conflict

Newspaper articles described the situation as a direct battle between water use for farms versus water use for wildlife (Denver Post 1992; Hays 1991), but this was an oversimplified view. A comprehensive analysis of the situation includes more fundamental concepts. Long-term implications of the current irrigated agriculture system in the region are questioned by nature and wildlife proponents. Agriculture's dependency on groundwater for irrigation is not realistic, given the finite nature of the resource. Environmentalists believe that current cropping techniques in the area cannot continue in the future because of these environmental constraints (Grover 1992).

On the other hand, the need for setting up a permanent wetland for some migratory birds is questioned by farmers who see their way of life threatened. The decision by the Chief Engineer to significantly cut Junior water rights seems unreasonable to farmers who absolutely depend on the water for their livelihood.

This paper will provide the contextual background for understanding this complex water use issue in the Great Plains. The major points of the IGUCA order will be outlined; and the Chief Engineer's decision will be evaluated on the basis of relevant social and ecological factors in the study area.

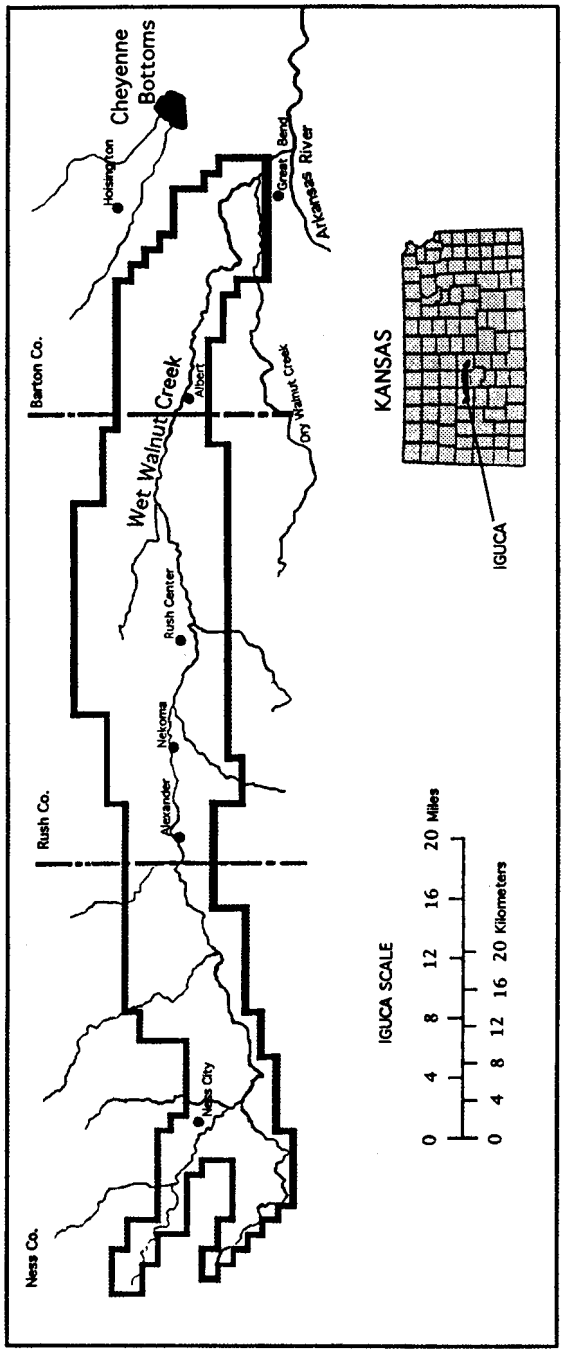

Figure 1. Walnut Creek Intensive Groundwater Use Control Area (IGUCA). Illustration by Paul Roberts.

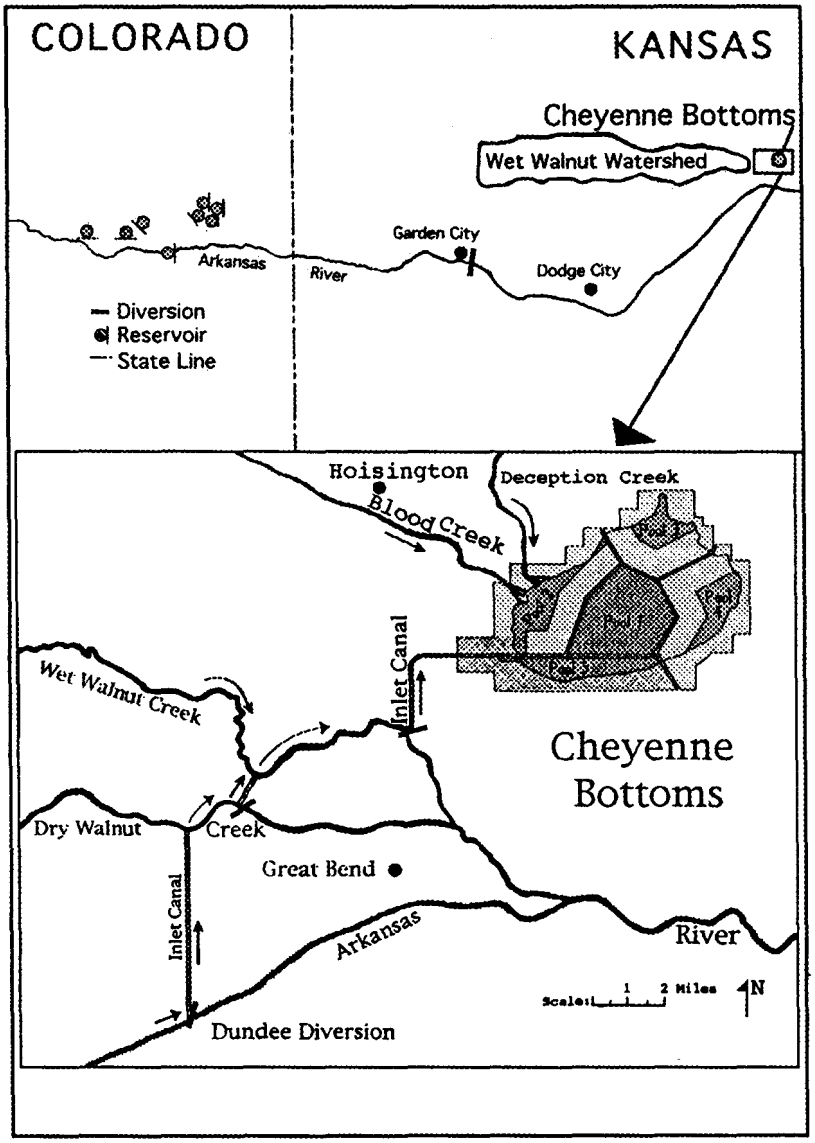

Figure 2. Surface water flow to the Cheyenne Bottoms area. Illustration by Paul Roberts.

The Wetland

Cheyenne Bottoms is a 41,000 acre elliptical-shaped lowland located six miles northeast of Great Bend in Barton County, Kansas (Wentz 1988) (Fig. 2). About 20,000 acres of this basin form the State of Kansas Cheyenne Bottoms Wildlife Area (Kansas Audubon Council 1992). Historically, the Bottoms were a treasured hunting ground for native Americans in the area, and since the late 1800s, white settlers and prospectors also realized its value (Miller 1988).

Many goose, duck, and crane species find their critical habitat at the Bottoms (Castro et al. 1990). It is also an important stopover site for migrating shorebirds (Brehm 1990), some of which migrate thousands of miles between South America and the Arctic each spring and fall (Western Hemisphere Shorebird Reserve Network 1992). Cheyenne Bottoms has attracted an estimated fifty percent of the entire northward migrating populations of North American shorebirds (Wentz 1988). Recreational activities, such as bird watching, are frequent at Cheyenne Bottoms (Sicilian and Coleman 1986). Likewise, hunting remains an important activity at the wetlands (Kansas Department of Wildlife and Parks 1992).

Historically, shifting water levels have been a problem at Cheyenne Bottoms, as variable precipitation and runoff were its only important sources of water. Although little water was lost through deep drainage into the water table, evaporation from vegetation and water surfaces was a major source of loss (Zimmerman 1990). With such unreliable natural water sources, the wetland was often dry (Miller 1988). In fact, it is estimated that in 1900 two or three years in five were dry (Layher and Zucherman 1988). Most information regarding the wetland habitat and its species diversity, however, reflects only wet year documentation.

The unreliable water supply became a point of concern for hunters and fishermen who used the area, so action was taken during the 1940s. In 1948, the Kansas Fish and Game Commission obtained a permit to divert 20,000 acre-feet of water annually from the Wet Walnut Creek to the wetlands (Layher and Zucherman 1988). An acre-foot is commonly used to measure water appropriations, and equals the amount of water it takes to cover one acre with one foot of water. The specific amount of 20,000 acre-feet was equal to most or all of the water flow from the creek at that time. Under prior appropriation water law, a water user must perfect a water right by actually taking and using the specified amount of water for a given time (Matthews 1984). The amount of Cheyenne Bottom's actual perfected right has never

been determined (Bagley 1989). Some farmers in the area now feel that the wetland did not ever perfect, or gain right, to the 1948 amount of water (Martin 1992).

In the 1950s, a 23-mile series of diversion dams and ditches transferred water from the Arkansas River via the Dry Walnut Creek and the Wet Walnut Creek (Zimmerman 1990) (Fig. 2). A surface water right of 30,000 acre-feet per year was secured from the Arkansas River (Zimmerman 1990). This was not a long-term solution for a secure water supply at the Bottoms, however, because water flow in the Arkansas River has been greatly impacted by human action (Grover 1988). The construction of reservoirs upstream in Colorado, and increasing irrigation in Colorado and Western Kansas have greatly reduced stream flows (Stanley 1989). In fact, the "Ark," as locals refer to it, is mostly dry in Western Kansas and only begins to flow again from Great Bend eastward. In addition to declining flows in the Arkansas River, the Walnut Creeks also ran dry due to decreased runoff from conservation tillage and a lowering of the water table from groundwater irrigation.

Research conducted in 1989 by the Kansas Division of Water Resources indicated a strong hydrological relationship between groundwater and surface waters in the Walnut Basin. The report concluded that stream flow in Wet Walnut Creek had decreased substantially over the preceding 30 years. This decrease was not a result of climate change; rather it was caused by a lowering of the water table. Groundwater levels have declined in the alluvial valley of Wet Walnut Creek since 1960, specifically by as much as 18 feet in Barton and eastern Rush Counties (Bagley 1989). State scientists agree that groundwater pumping by irrigation wells is the main cause of these declines (Pope 1992).

Because of decreased stream flows, both in the Arkansas River and the Walnut Creek basin, Cheyenne Bottoms once again was forced to rely on fluctuating precipitation as its main source of water. This predicates a natural annual fluctuation in water levels and the return of wet and dry years at the wetland.

The Importance of Agriculture

Kansas has over 31 million acres of cropland and claims 7.1% of the total farmland in the U.S., which ranks it second in the country. In 1989, the total net earnings from agriculture in Kansas were $1.1 billion (Kansas State Board of Agriculture 1990). Several billboards along Interstate 70 proudly

state: "A Kansas Farmer Feeds 92 people and YOU!" (Women's Agriculture Club 1992).

The loss of water rights near Cheyenne Bottoms could cost farmers as much as $6.6 million in lost crops, plus much more could be lost in the local economy (Hays 1992). In addition to these basic profit considerations, farmers have invested large amounts of capital in irrigation technology. Both center pivot and gated pipe irrigation are used in the area.

Some farmers were especially vulnerable to the IGUCA Order. The Order required a cut in *actual use* instead of "paper rights," which are the granted water rights obtained in the past. This seems unfair to some farmers, especially those who already implemented water conservation practices. One example is Mr. Phil Martin, a Junior water rights farmer in the area. He will have to make a large sacrifice: on one of his fields, he had the paper right to irrigate 248 acres, but he only irrigated 180 acres because he was already trying to conserve water. Now, under the Order, he is only able to receive water allotted ($5^1/_4$ inches) on the 180 acres instead of his full 248 acres. Successful corn crops require up to 13 inches of irrigation water in this region during a normal year, so Mr. Martin will be far short of what he needs to grow corn (Pope 1992).

Farmers in the area claim that irrigated crops give them a profit 9 out of 10 years, but dryland crops provide a profit only 5 out of 10 years. They feel that the financial insecurity of dryland farming is not a wise way to raise a family in this region (Painter 1991). The legal aspects of the IGUCA order are questioned by many in the farming communities affected.

Kansas Water Law

Under the 1978 Kansas Legislature, the Chief Engineer was given the right to set Kansas water law aside during disputes and act alone to settle a regional problem. By setting up an IGUCA, the Chief Engineer can decide how to redistribute water (Hays 1991). While Kansas law defines different types of water rights, and even priority principles governing appropriations; the Chief Engineer may act above these when they decide that an IGUCA is necessary.

There are several important concepts and types of water rights. The "use it or lose it" concept indicates the importance of making continuous use of a specified amount of water to maintain an individual's right for that water amount. The vested right is the oldest water right in the state, and the law

emphasizes the need for continuous use of the water to uphold a right. Those with vested rights have the "right to continue use having actually been applied to any beneficial use, including domestic use, on or before June 28, 1945" (K.S.A.:82a-701d).

There is a hierarchy of water rights, which is stressed in Kansas water law. The appropriation right is to "divert from a definite supply a specific quantity at a specific rate, provided water is available in excess of requirements of all vested rights that relate to such supply and all appropriation rights of earlier date . . . apply to beneficial use or uses in preference to all appropriation rights of later date" (K.S.A.:82a-701f). This further emphasizes the importance of an earlier right over a later right. A water user has priority, which will be upheld above all other water rights, if it was first. This is referred to as the "first in time, first in right" concept.

There are two pure types of water rights' systems in the United States. The riparian system is present primarily in the Eastern U.S., and it basically allows all water users to share water supplies equally. The appropriation system, however, gives priority to earlier users and does not support an equal distribution to all users. Although riparian rights were adequate in Eastern Kansas where there was more water to be shared, this was not the case in Western Kansas. Settlement in the arid Western portions of the state was better suited to appropriation rights, since there was not enough water to share equally, so the Kansas Legislature acted to implement appropriation rights in 1945 (Hutchins et al. 1957). As with many "hybrid" or combination water rights states, Kansas required riparians to obtain permits by a specified date to preserve their vested rights and from that date on only appropriation rights were made (Getches 1990). In Kansas this definitive date was October 1, 1965.

Kansas law sets the principles governing appropriations in "order of preference: domestic, municipal, irrigation, industrial, recreational, and water power uses" (K.S.A.:82a-707b). These preferences, however, are not as important as the "date of priority of appropriation right," which "determines the right to divert and use water (when supply is not sufficient to satisfy all rights)" (K.S.A.:82a-707b). The water law itself, then, is not absolutely consistent in regard to use preferences versus date of appropriation, but in most disputes the date is considered more important.

The public trust doctrine is commonly used in water issues to emphasize the importance of general public well-being. In Kansas, this idea was made law by the 1945 Legislature, which determined that "all water within the state of Kansas is hereby dedicated to the use of the people of the state;

subject to the control and regulation of the state . . ." (K.S.A.:82a-702). A potential inconsistency in Kansas water law is also seen here. The legislature implemented appropriation rights, which are an individualistic method of water distribution in which there is no sharing at times of scarcity. Yet, simultaneously a broad statement was made to acknowledge the public interest in water resources.

Another inconsistency is evident because the state historically granted water rights over the amount of available water. The development of irrigation technologies, particularly center pivot irrigation, contributed to a threefold increase in irrigated farmland in Kansas between 1959 and 1975. This led to a notably severe situation in the late 1970s. According to a 1975 legislative audit, the Division of Water Resources rarely took into account the actual amount of available water when approving requests for new appropriation rights (Hays 1991). The state government has since become aware of the potential conflicts which arise from the over-appropriated streams and rivers in Kansas. So, action was taken. Today there are strict criteria for new water appropriation, thus future conflicts may be reduced. Yet, previously granted rights are still problematic because many streams remain over-appropriated.

Potential water conflict issues have been noted by state authorities, and other aspects of water resource use and distribution are planned and managed in Kansas. In addition to the general water programs administered by various state agencies, Kansas also has one comprehensive planning process (Kansas Water Office 1990). The Kansas Water Office is the water planning agency for the state, and it is required to provide ". . . a state water plan for the management, conservation and development of the water resources of the state" (K.S.A.:82a 903).

Cheyenne Bottoms Wetland was described in the Kansas Water Plan: Fiscal Year 1993, as a "problem" area (Kansas Water Office 1991:54). Too little water reached the wetland, and the management of the wetland did not provide the most efficient use of the water. By simply noting its "problem" status, however, the Kansas Water Plan provided no guidance for the wetland or for the neighboring farmers. No long-term solution for the complex issue of insufficient water supply was addressed in the State Water Plan.

The IGUCA Order

State and national environmental organizations voiced increasing concern for Cheyenne Bottoms Wetland, which spurned governmental action

(Grover 1992; Harper 1991; Save the Bottoms 1991). In 1990, the Manager of the Big Bend Groundwater Management District Number 5 requested that the Chief Engineer initiate proceedings for the designation of an IGUCA in the Walnut Creek Basin. Numerous public hearings were held regarding this issue. The Chief Engineer conducted a study of the hydrologic and legal aspects of the water use situation in the wetland and surrounding areas. He then designated a regulatory plan for the region, which included the 1992 IGUCA order (Pope 1992). The specific order provisions are summarized below.

An Intensive Groundwater Use Control Area (IGUCA) was to be established in the Walnut Creek Valley in parts of Barton, Rush, and Ness Counties. This was designated as an area in need of aquifer restoration, and the Wet Walnut Creek and its tributaries were in need of stream recovery. The IGUCA order closed the area to new surface and groundwater appropriations, except for domestic use, temporary permits, emergency one-year appropriation, or to protect public health and safety. Installation of flow meters was required by June 1, 1992, on all surface water diversion facilities and all wells, except those for domestic purposes.

Water allocations were based on the average annual long-term sustainable yield amount for groundwater in this area, which was determined in previous hydrologic studies to be 22,700 acre-feet (Bagley 1989). This is "sustainable yield" because it is the calculated amount of water that may be taken out of the ground each year without changing the baseflows, given the groundwater recharge rate in the region. Groundwater within the IGUCA was allocated on a five-year basis, beginning with the calendar years 1992 through 1996. Depending upon the type of water right, water users were grouped into categories and given specific regulations, which did not follow the "first in time, first in right" concept.

All vested rights holders were allocated their current authorized quantities. Senior appropriation rights holders, with priority dates on or before October 1, 1965, were allocated a "reasonable" amount of groundwater for irrigation uses. This specific allocation was 12 inches in Barton County, 13 inches in Rush County, and 14 inches in Ness County based on the maximum number of acres actually irrigated or authorized. Junior appropriation rights holders, with priority dates subsequent to October 1, 1965, were allocated 44% of Senior rights allocations based upon actual acres already irrigated. This is specifically figured as $5^1/_4$ inches in Barton County, $5^3/_4$ inches in Rush County, and $6^1/_4$ inches in Ness County on each acre the Junior holder had already irrigated. Non-vested municipal users were allocated groundwa-

ter on the basis of 90% of the per capita average water use for a city of their size and location.

An advisory committee was established with representatives from each of the concerned parties. The committee makes recommendations to the Chief Engineer regarding the types of data to be collected and the best way to manage the IGUCA.

A review must be held every five years to evaluate information from future studies, review the status of water rights, and make necessary adjustments. Conservation plans must be adopted by vested, municipal, and industrial appropriation rights holders. The Kansas Department of Wildlife and Parks was required to develop a plan for improved conservation and management of water in Cheyenne Bottoms Wetland (Pope 1992).

Evaluation and Analysis

There are several positive aspects of the Chief Engineer's order. First, the establishment of an IGUCA in the Walnut Creek Valley is a reasonable step and probably overdue. There is indeed need for aquifer restoration and stream recovery. As stated in a 1989 hydrologic report on the region, the "pumpage of groundwater and surface water has exceeded the ability of the surface water and groundwater system to be recharged on a consistent basis" (Bagley 1989:7). The impact of agriculture on the surrounding environment has been realized in this case, which is a key issue nationwide (National Research Council 1982).

Second, it is appropriate, given the hydrologic evidence of overuse, that the area be considered closed to new surface and groundwater appropriations. This is valuable foremost as a principal which implies that the state realizes that water supplies are exhaustible. Third, the required installation of flow meters and the establishment of five-year water allocations indicate that long-term planning is being embraced.

Lastly, the Order indicates that conservation plans must be adopted by vested rights, municipal, and industrial appropriation rights holders. Cheyenne Bottoms Wetlands must develop conservation plans, which are clearly needed, since most of the conveyance canals to the wetlands are not lined and are subject to high seepage and evaporation rates.

The negative aspects of the order provisions are found in the allocation amounts. As in any "hybrid" water rights system, vested rights were given priority, and the Senior and Junior users were categorized not in terms of reasonable or necessary water use, rather solely in terms of priority date.

This decision is clearly defendable from a prior appropriation legal standpoint, but is arbitrary from a resource conservation standpoint. Depending on the resource management goals, several potential scenarios can be described.

If wetland protection had been the main goal, for example, a different order would have been issued. The water allocation order would have been different had the Chief Engineer determined that Cheyenne Bottoms Wetland was an internationally valuable stopover site for numerous species of birds and that the wetlands should be protected at all cost. The order would have terminated all Junior rights in the region until the water table recovered, stream flows stabilized, and Cheyenne Bottoms water levels were secure. This was clearly not the Chief Engineer's goal in this water use decision.

In a second scenario, truly equitable distribution of water for farmers could have been based on scientific modeling of site characteristics and intended crop type water requirements. Specific water use guidelines could have been formulated and each farmer granted a reasonable amount of water to grow a certain crop in a specific area. No longer would one farmer be granted more water (although the farmer may not necessarily need it all) simply because of holding Senior rights. Those who practiced crop rotation and conservation in the past would no longer feel punished. This scientific model allocation could be applied in the IGUCA to achieve long-term conservation of water, but it is unrealistic under current water rights and Kansas Water Law. Under the current system, there is no correlation between the amount of water needed and the amount received; rather the date of a water permit is the determining factor in water appropriations.

Conclusions

The Cheyenne Bottoms water regulation decision has often been presented in an oversimplified manner. Instead of farmers versus nature, the real issue developed in terms of water use rights. A priority date of 1948 is held by Cheyenne Bottoms Wetland, and although it was never legally perfected, it is one of the oldest paper rights in the area.

The Chief Engineer drew upon this legal right in making the IGUCA decision. Although the actual amount of water perfected by Cheyenne Bottoms was not delineated in the order, the early permit date held by the wetland appears to be the basis for the decision. Yet, the prior appropriation rules were not completely adopted either; for if they were, the Junior farmers

would have been required to give up all their water until the total Senior water right of Cheyenne Bottoms was met.

The contradictory nature of water law in "hybrid" states such as Kansas, allows for this IGUCA order. Individual appropriation rights must be guaranteed, but at the same time the general concept of a public trust doctrine continues to play a role in decisions. The meaning of "public trust" is complex, and an argument was easily made from each side: both the agricultural and the wetland use of water were for the public good.

The legal structures regulating water use have remained constant, although social influences and environmental perceptions have changed. The original purpose in securing a steady water supply for the wetlands was to provide people with good hunting grounds. Hunting still occurs, but now the need for a constant water supply is also based on ecological concern for protecting migrating bird and duck species. Although these social perspectives change, the regulation of natural resource use does not adapt quickly.

The legal institutions which established and continue to uphold the prior appropriation doctrine are faulty in that the "use it or lose it" rule still applies. It is beneficial for some farmers to waste water simply to keep their appropriation rights for later use. Consideration of conservation practices must be taken into account and encouraged through new legal procedures.

Despite the amount of attention it received, the complexities of this issue were seldom addressed. The existing system of water resource use has developed over decades and generations. It is a fundamental social factor in the region, as water use evolved alongside a specific agricultural way of life. Mandated changes in water use imply a threat to this agricultural way of life.

Since one of the earliest water rights held in the area did belong to Cheyenne Bottoms Wetland, this was a unique case in which wildlife actually had the legal right to at least some of the water. Fear of precedence setting is inaccurate, given the presence of a legal right in this specific instance. Unless other wetlands or natural areas actually hold the priority water right in a region, there is little chance that this order will become the legal basis for similar decisions in the future.

It does seem likely, however, that future conflicts will continue to arise among individuals and groups vying for scarce water resources in the Great Plains. This water use regulation order caused disagreement between neighbors and led to emotional appeals from farmers, environmentalists, business people, and others. Yet, this IGUCA order is a logical outcome of the current legal system for water resource distribution in Kansas.

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